



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/807,441

03/24/2004

Kenji Mori

119058

4270

25944 7590 06/25/2008

OLIFF & BERRIDGE, PLC

P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

TYLER, NATHAN K

ART UNIT

PAPER NUMBER

2625

MAIL DATE

DELIVERY MODE

06/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/807,441	<b>Applicant(s)</b> MORI, KENJI	
	<b>Examiner</b> NATHAN K. TYLER	<b>Art Unit</b> 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1 and 3-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 5, 6, 9-12, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kuwata et al. (JP 10208034 A) and Fukazawa et al. (JP 10191090 A). For purposes of this action, the Examiner will rely upon the machine translation of Kuwata '034 provided by the Applicant. A full translation was given to applicant's representative during the personal interview on 5 June 2008. The Examiner will also rely on US 6825958 B1, which is an English language equivalent of Fukazawa '090.

Regarding **claims 1 and 14**, Kuwata discloses an image processor and corresponding image processing method that corrects input image data having a predetermined grayscale range, comprising: a coefficient holding device to hold correction coefficients (see paragraphs 97 – 99, “gamma1” and “gamma2”) of a correction curve that correspond to the entire grayscale range or a portion of the grayscale range (see Drawing 25, range of 0 – 255) and include one or more correction points (see Drawing 25, correction points at yq1 and yq3) and a combination portion that is formed of a combination of a plurality of specific curve pattern portions, the coefficient holding device holding only the correction coefficients corresponding to one of the specific curve pattern portions in the combination portion; (see paragraph 96, “the so-called S character curve of I/O becomes as shown in drawing 16.” the coefficients yq1 and yq3 are held only for the specific portions occurring at the points yq1 and yq3); a correction amount determination device to determine a correction amount based on statistical information of grayscale values of pixels in the input image data (see paragraph 98: “this ratio is controlled based on the standard deviation”); and a correction device to correct the input image data by adding a product of the correction amount and the correction coefficients determined by the input image data to the input image data see paragraph 111: “image data is changed at step S208”), the correction device including a device to generate correction coefficients corresponding to the combination portion based on the correction coefficients corresponding to the specific curve pattern portion (As shown in Fig. 25, the entire “S curve” is generated using the two specific points of yq1 and yq3).

Kuwata does not disclose that each of the specific curve pattern portions include a plurality of points that show a pattern of the specific curve pattern portion.

Fukazawa teaches a color conversion system that uses a stored pattern portion including a plurality of points that show a pattern and may be interpolated to obtain the full correction curve ("step S130 of forming the color conversion table 21b2b having a predetermined size from a pre conversion color conversion table 21b2c having a small size by a predetermined interpolation calculation" at column 9, line 1. This smaller table has a plurality of points: "the pre conversion color conversion table 21b2c having a small size of actually only five lattice coordinates" at column 9, line 49).

Because Kuwata teaches storing a limited number of points that may be used to form a full color correction curve, and Fukazawa teaches storing a limited number of points showing a pattern that may be interpolated into the full curve, It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the system disclosed by Kuwata such that each of the specific curve pattern portions include a plurality of points that show a pattern of the specific curve pattern portion, in order to obtain a more detailed correction curve while still using a relatively small amount of memory for storage.

Regarding **claim 4**, Kuwata discloses the correction points being two points that are symmetric with respect to the center of the grayscale range (see Drawing 25, yq1 and yq3 are symmetric with respect to the center at ymid), and the coefficient holding device holding correction coefficients that make absolute values of the correction amount at the two points equal and have opposite polarities (As shown in Drawing 25, the correction amounts applied at yq1 and yq3, with respect to the center line  $Y=y$ , are equal in value and opposite in magnitude).

Regarding **claim 5**, Kuwata discloses the correction points being two points that are a quarter of the lower limit of the grayscale range and a quarter of the upper limit of the grayscale range (yq1 and yq3 are the lower quarter and upper quarter, as shown in Drawing 25. “lower-part side 4 equinox yq1” and “upper-part side 4 equinox yq3” at paragraph 104), and the coefficient holding device holding correction coefficients that make the absolute values of the correction amount at the two points equal and have opposite polarities (see grounds for rejection for claim 4).

Regarding **claim 6**, Kuwata discloses the correction point being one of the two points that are symmetric with respect to the center of the grayscale range (see grounds for rejection for claim 4).

Regarding **claims 9 and 15**, the combination of Kuwata and Fukazawa as applied to claim 1 teaches an image processor and corresponding image processing method that corrects input image data having a predetermined grayscale range, comprising: a coefficient holding device to hold correction coefficients (see paragraphs 97 – 99, “gamma1” and “gamma2”) of a correction curve that correspond to the entire grayscale range or a portion of the grayscale range (see Drawing 25, range of 0 – 255) and include one or more correction points (see Drawing 25, correction points at yq1 and yq3) and a combination portion that is formed of a combination of a plurality of specific curve pattern portions (see paragraph 96, “the so-called S character curve of I/O becomes as shown in drawing 16”), the coefficient holding device holding only the correction coefficients corresponding to one of the specific curve pattern portions in the combination portion (the coefficients yq1 and yq3 are held only for the specific portions

occurring at the points  $y_{q1}$  and  $y_{q3}$ ); a correction amount determination device to determine a correction amount based on statistical information of grayscale values of pixels in the input image data (see paragraph 98: “this ratio is controlled based on the standard deviation”); a correction curve data generating device to generate and store correction curve data with respect to all grayscale values corresponding to the grayscale range with reference to the coefficient holding device by adding a product of the correction amount and the correction coefficient corresponding to each of the grayscale values to each of the grayscale values (see paragraph 107 “it is also possible to ask for the brightness  $Y$  after conversion corresponding to all the values that brightness  $y$  can take beforehand,” this data is stored as shown in Drawing 26); and a correction device to perform grayscale correction on the input image data with reference to the correction curve data (see paragraph 111: “image data is changed at step S208”), the correction device including a device to generate correction coefficients corresponding to the combination portion based on the correction coefficients corresponding to the specific curve pattern portion (As shown in Fig. 25, the entire “S curve” is generated using the two specific points of  $y_{q1}$  and  $y_{q3}$ ), each of the specific curve pattern portions including a plurality of points that show a pattern of the specific curve pattern portion (see grounds for rejection for claim 1).

Regarding **claim 10**, Kuwata discloses the correction points being two points that are symmetric with respect to the center of the grayscale range (see Drawing 25,  $y_{q1}$  and  $y_{q3}$  are symmetric with respect to the center at  $y_{mid}$ ), and the coefficient holding device holding correction coefficients that make absolute values of the correction amount at the two points equal and have opposite polarities (As shown in Drawing 25, the correction amounts applied at  $y_{q1}$  and  $y_{q3}$ , with respect to the center line  $Y=y$ , are equal in value and opposite in magnitude).

Regarding **claim 11**, Kuwata discloses the correction points being two points that are a quarter of the lower limit of the grayscale range and a quarter of the upper limit of the grayscale range (yq1 and yq3 are the lower quarter and upper quarter, as shown in Drawing 25. “lower-part side 4 equinox yq1” and “upper-part side 4 equinox yq3” at paragraph 104), and the coefficient holding device holding correction coefficients that make the absolute values of the correction amount at the two points equal and have opposite polarities (see grounds for rejection for claim 10).

Regarding **claim 12**, Kuwata discloses the correction point being one of the two points that are symmetric with respect to the center of the grayscale range (see grounds for rejection for claim 10).

Regarding **claim 16**, Kuwata discloses a computer-readable recording medium on which an image processing program is recorded, the image processing program correcting input image data having a predetermined grayscale range and being executable by a computer (“the computer 21 executes the program of each image processing saved at internal ROM and an internal hard disk” at paragraph 66), the program comprising: instructions to hold correction coefficients of a correction curve that correspond to the entire grayscale range or a portion of the grayscale range and include one or more correction points and a combination portion that is formed of a combination of a plurality of specific curve pattern portions, the instruction to hold the correction coefficients holding only the correction coefficients corresponding to one of the specific curve pattern portions in the combination portion; instructions to determine a correction amount based on statistical information of grayscale values of pixels in the input image data; and instructions to perform grayscale correction on the input image data by adding a product of the correction



amount and the correction coefficients determined by the input image data to the input image data, the instructions to perform the grayscale correction including instructions to generate correction coefficients corresponding to the combination portion based on the correction coefficients corresponding to the specific curve pattern portion, each of the specific curve pattern portions including a plurality of points that show a pattern of the specific curve pattern portion (see grounds for rejection for claim 1).

Regarding **claim 17**, Kuwata discloses a computer-readable recording medium on which an image processing program is recorded, the image processing program correcting input image data having a predetermined grayscale range and being executable by a computer (“the computer 21 executes the program of each image processing saved at internal ROM and an internal hard disk” at paragraph 66), the program comprising: instructions to hold correction coefficients of a correction curve that corresponds to the entire grayscale range or a portion of the grayscale range and include one or more correction points and a combination portion that is formed of a combination of a plurality of specific curve pattern portions the instructions to hold the correction coefficients holding only the correction coefficients corresponding to one of the specific curve pattern portions in the combination portion; instructions to determine a correction amount based on statistical information of grayscale values of pixels in the input image data; instructions to generate and store correction curve data with respect to all grayscale values corresponding to the grayscale range by adding a product of the correction amount and the correction coefficient corresponding to each of the grayscale values to each of the grayscale values; and instructions to perform grayscale correction on the input image data with reference to the correction curve data, the instructions to perform the grayscale correction including

instructions to generate correction coefficients corresponding to the combination portion based on the correction coefficients corresponding to the specific curve pattern portion (see grounds for rejection for claim 9), each of the specific curve pattern portions including a plurality of points that show a pattern of the specific curve pattern portion (see grounds for rejection for claim 1).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kuwata and Fukazawa as applied to claim 1 above, and further in view of Konishi (US 6046820 A).

Regarding **claim 3**, Kuwata does not disclose the combination portion including a portion symmetric with the specific curve pattern portion with respect to a horizontal axis or a vertical axis of the correction curve used as a reference axis.

Konishi teaches an image processing method using a correction curve with portions symmetric with respect to the vertical axis (see Fig. 2. The coefficients are given by the distance from the “ideal curve” to the “correction curve.” If these values were plotted against their respective input values, similar to applicant’s Fig. 10b, the result would be symmetrical with respect the vertical axis).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to further modify the image processing system disclosed by Kuwata so that the combination portion including a portion symmetric with the specific curve pattern portion with respect to a horizontal axis or a vertical axis of the correction curve used as a reference axis as

taught by Konishi, so that a correction curve similar to the curve taught by Konishi could be utilized, which is useful for density curve correction in printers.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kuwata and Fukazawa as applied to claim 1 above, and further in view of Maeda et al. (US 5872643 A), and Udagawa (US 4908701 A).

Regarding **claim 7**, Kuwata does not explicitly disclose the correction device performing luminance correction and color difference correction on the input image data using the same correction coefficients held by the coefficient holding device.

Maeda discloses an image correction system that uses the same device to perform both luminance correction and color correction (with reference to Fig. 4: “circuit 15 in which the luminance correction and the color correction are applied” at column 8, line 10).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to use the correction coefficient holding device taught by Kuwata to perform both luminance and color correction as taught by Maeda, so that the capability of color correction could be added to the Kuwata system without any additional devices.

The combination of Kuwata and Maeda does not disclose that the color correction is color difference correction.

Udagawa teaches that it is well known in the art to perform color difference correction (“This circuit functions to receive two-color difference signals R - Y, B - Y, corrects these signals and outputs two-color difference signals” at column 7, line 66).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the color correction system taught by the combination of Kuwata and Maeda to correct color difference as taught by Udagawa, so that the system could operate on color difference signals.

6. Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kuwata, Fukazawa, Maeda, and Udagawa as applied to claim 7 above, and further in view of Main (US 5408267 A).

Regarding **claim 8**, the combination of Kuwata, Fukazawa, Maeda, and Udagawa as applied to claim 7 does not disclose that the correction device simultaneously performs the luminance correction and the color difference correction by time-divisionally referring to the coefficient holding device.

Main teaches that it is well known in the art to simultaneously perform the same process on multiple channels by time-divisionally referring to the processing device (“the gamma correction transfer function is identical for each of the three colors, red, green and blue, and the circuitry within the gamma correction unit 106 may in fact be multiplexed such that all three conversions are performed by a single circuit.” at column 9, line 5).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to time-division multiplex the channels as taught by Main in the luminance and color difference correction system taught by the combination of Kuwata, Maeda, and Udagawa, so that the luminance and color difference correction could be performed simultaneously.

Regarding **claim 13**, the combination of Kuwata, Fukazawa, Maeda, Udagawa, and Main as applied to claim 8 discloses the correction including chroma correction that corrects two color difference data of the input image data (“receive two-color difference signals R - Y, B - Y, corrects these signals and outputs two-color difference signals” at Udagawa column 7, line 66), and the correction device performing correction on the two color difference data by time-divisionally referring to the same correction curve data (see grounds for rejection for claim 8).

### *Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN K. TYLER whose telephone number is (571)270-1584. The examiner can normally be reached on M-F 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/  
Supervisory Patent Examiner, Art Unit 2625

/Nathan K Tyler/  
Examiner  
Art Unit 2625